

SCIENCE AND TECHNOLOGY BENEFIT ANALYSIS

Idaho Operations Office – Idaho National Engineering and Environmental Laboratory
Bechtel-BWXT Idaho, LLC.

Mobile Real-Time Radioscopy (RTR) System

The Mobile Real-Time Radioscopy (RTR) System provides the Transuranic Waste Program with a system capable of providing remote, real-time, non-intrusive characterization of CH-TRU waste drums for certification to ship to the Waste Isolation Pilot Plant (WIPP). INEEL's Environmental Management (EM) Program is responsible for managing a variety of Cold War Legacy waste that originated from INEEL operations and nuclear research activities from other sites. The Settlement Agreement established between the State of Idaho and the Department of Energy states that 3100 m³ of CH-TRU waste stored at the INEEL will be removed and transported to WIPP. The increased capacity obtained through the addition of the Mobile RTR to the waste process will be vital for the WM Program to meet the 3100 m³ milestone. Characterization using the Mobile RTR began on April 25, 2001 to examine and stage 40 drums prior to the Carlsbad Audit. Certification by the audit was successful and the system became certified to characterize CH-TRU waste on May 10, 2001. The Mobile RTR system is able to perform both visual and radioactive examinations of 55 and 85 gallon drums; as well as, identification of liquid present within drums. Liquid identification is accomplished by jogging the drums and visually verifying wave motion within the drums. Acquisition of the Mobile RTR provides the Transuranic Waste Program with more than double the drum processing capacity without having to completely construct a new RTR system and its supporting infrastructure. This system was modified from its original "off-the-shelf" configuration to better integrate with the SWEPP facility and the Safety Analysis Report. This resulted in the construction of a 10 foot heated enclosure within SWEPP that automated the drum loading/unloading operations, as well as, upgrades and/or modifications to the electrical, mechanical, structural, and software systems. The foundations supporting the heated enclosure and the Mobile RTR were replaced to support the increased load requirements. Software modifications were also performed to allow the Mobile RTR operators to input certification data into the TRIPS database. This deployment by the Transuranic Waste Program (PBS-WM-103) helps meet STCG need(s) ID-3.1.46 and ID-3.1.54.

Qualitative Benefit Analysis

Programmatic Risk	●	The Mobile RTR system allows the 3100 m ³ project to more than double the current capacity to characterize CH-TRU waste for certification to ship waste to WIPP.
Technical Adequacy	◐	The system provides continuous operation with a minimum of 80% availability based upon 24 hour/day, 7 days/week schedule with a throughput of at least four drums an hour. This is an improvement of system operability, reliability, and maintainability over the baseline system (SWEPP Pilot RTR).
Safety	◐	The system provides remote operation, non-intrusive characterization to identify and verify drum contents, radiation levels and provides determination of the presence of liquid or sludge. System modifications combined with alarm and warning panels have resulted in multiple safety significant components being identified. Worker exposure reduced by system shielding from 2 mr/hr to 0.5 mr/hr.
Schedule Impact	●	The Mobile RTR has processed an average of 178 drums per week. This increase in drum processing capacity will allow the 3100 m ³ project to accelerate their schedule. Without the supplement NDE capacity provided by the Mobile RTR, the 3100 m ³ project may not have been able to meet FY01-02 milestones as established by the Settlement Agreement.



Major improvement



Some improvement



No change



Somewhat worse



Major decline

Quantitative Benefit Analysis	
Cost Impact Analysis	Project achieves cost avoidance through overall capacity increase of the system to process waste drums for certification and avoidance of costs fixed to capital investments and potential costs associated with missing 3100 m ³ milestones.
	Annual Savings \$3,530,000
	Life Cycle Cost Savings \$3,910,000
	Return-On-Investment (ROI) 45%

SCIENCE AND TECHNOLOGY BENEFIT ANALYSIS DEPLOYMENT APPROVALS

Technology Deployed: Mobile Real-Time Radioscopy (RTR) System

Date Deployed: 4/15/01

EM Program(s) Impacted: Waste Management

Approval Signatures

Contractor Program Manager Date

Contractor Program Manager Date

DOE-ID Program Manager Date

DOE-ID Program Manager Date